Exhibit B
Appendix C

BOOK4848 PAGE0088

Department of Environmental Conservation

Division of Hazardous Waste Remediation

# Record of Decision

## Syracuse China Site
## Town of Salina, Onondaga County
## Site Number 7-34-053

**March 1996**

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

# DECLARATION STATEMENT - RECORD OF DECISION

## Syracuse China Inactive Hazardous Waste Site
## Town of Salina, Onondaga County, New York
## Site No. 7-34-053

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Syracuse China Inactive Hazardous Waste Disposal Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Syracuse China Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Syracuse China Site and the criteria identified for evaluation of alternatives the NYSDEC has selected capping of the landfill consistent with the requirements of 6 NYCCR Part 360, a groundwater interception system to lower the groundwater table to prevent leaching from the fill, and the excavation and consolidation into the capped landfill of; fill from the eastern landfill area, sludges from the treatment ponds, and the contaminated wetland sediments. The components of the remedy are as follows:

- A remedial design program to provide the details necessary for the construction and monitoring of the remedial program. This will include additional sampling and wetland environmental testing as necessary to better delineate the areas of concern, in the wetlands and the extent of the groundwater.

- Excavation and consolidation of the contaminated settling pond sludges and fill materials, located beyond the cap boundary in the eastern portion of the landfill, into the area to be capped.

- Excavation and consolidation under the cap of approximately 1.3 acres of the landfill to restore the Class 2 wetland to original area prior to encroachment by the landfill.

- Excavation and consolidation under the cap, of the contaminated wetland sediments in an approximately ten acre area. This area and the depth of contamination will be further defined during the predesign phase of the project. Remediated wetland areas will be revegetated to control erosion.

- Installation of an upgradient groundwater interception system, which will be designed to intercept groundwater passing through the fill and lower the water table below the fill, or other appropriate system to prevent leaching of lead from the fill material into the groundwater.

- Capping of the landfill consistent with the applicable requirements of 6NYCRR Part 360, which will include but not be limited to: 1) installation of a 40 mil. Geomembrane liner cap; 2) 24 inches of barrier protection; 3) six inches of top soil; 4) installation of surface drainage, and; 5) performance of explosive gas and hydrogen sulfide generation surveys, and if necessary, design of a landfill gas collection system based on these results. The cap will be designed so that no additional encroachment on the wetland will result.

- Reconstruction of the settling ponds, as necessary to maintain the current wastewater discharge. State Pollution Discharge Elimination System (SPDES) permit compliance must be maintained during remediation.

- Since the remedy will result in untreated hazardous waste remaining on the site, a long-term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent containment to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/26/96
Date

Michael J. O'Toole, Jr., Director
Division of Hazardous Waste Remediation

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## SECTION 1: SITE LOCATION AND DESCRIPTION

The Syracuse China facility is located in an urban setting in the Town of Salina, Onondaga County, New York (Figure 1). The landfill, where a waste with hazardous waste characteristics was disposed, is located to the north of the manufacturing facility on Syracuse China Property. The landfill occupies an area of approximately 13 acres and is bounded by Conrail tracks on the south side, a NYSDEC regulated wetland (SYE 6), Factory Ave and Ley Creek on the north side and undeveloped Syracuse China property to the east and west. The Syracuse China Site is near the General Motors Corporation (GM) plant Site No. 7-34-057 and the Ley Creek PCB Dredgings Site No. 7-34-044 inactive hazardous waste sites.

## SECTION 2: SITE HISTORY

### 2.1: Operational/Disposal History

The Syracuse China Site is defined as the industrial landfill, the settling ponds and the adjacent wetlands (See figure 2). The site has been used as an industrial landfill by Syracuse China since approximately 1940 and had open public access until the access roads to the property were fenced sometime in the late 1960's or early 1970's. Syracuse China was purchased by the Pfaltzgraff Company in 1989 who subsequently sold to Syracuse China to the Libbey, Inc. In 1995.

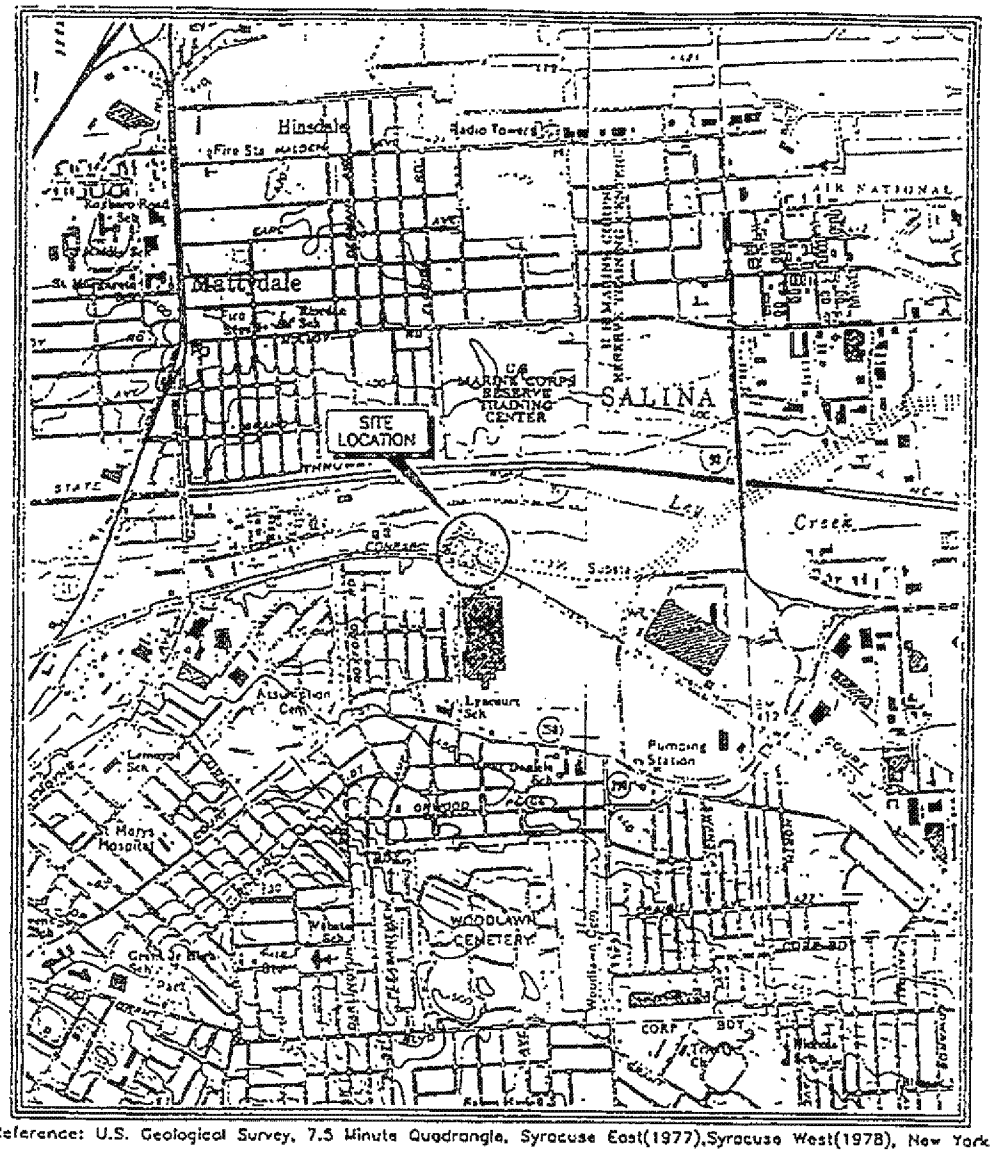
The landfill can be divided into two separate areas. The western half of the landfill is the oldest section and contains broken china, gypsum molds, facility wastewater sludge, refractory materials and other miscellaneous china manufacturing wastes. The eastern half contains solid waste piles, the settling ponds, various low lying areas of china manufacturing waste and some dried sludges from the settling ponds.

Current site topography is dominated by the two sections. The western half is much larger and higher than the eastern half of the landfill. The area of lower elevation of the eastern portion of the landfill is the location of the two primary and two secondary settling ponds which are part of the wastewater treatment settling pond system, operated by Syracuse China under a State Pollution Discharge Elimination System (SPDES) permit. The outfall of the settling ponds, which is the sampling point for the SPDES permit, discharges to the wetland.

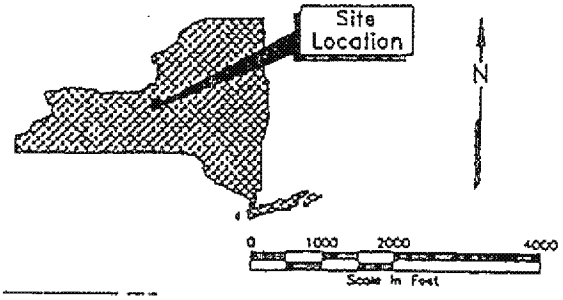
### 2.2: Remedial History

April 1990: Syracuse China agreed to conduct a groundwater quality study around the landfill in response to revised 6 NYCCR Part 360 regulations. A report, entitled "Preliminary Hydrogeologic Assessment Report" was prepared which detailed the results of investigations conducted to characterize the surface water and groundwater quality in the vicinity of the landfill, and also included sampling of wastewater sludges disposed adjacent to the settling ponds. The major problem identified was in the sludge samples, which were found to be characteristic hazardous wastes due to the failure for lead in the Extraction Procedure (EP) toxicity test. Some surface water samples also indicated the presence of lead above the calculated surface water standard.

March 1991: The Syracuse China Site was listed as a class 2 inactive hazardous waste site due to the presence of lead as a characteristic hazardous waste and the threat posed to the wetlands system. The lead was a constituent of the china glazing process wastes. Changes to the filtering process have since removed the lead and other inorganics from the wastewater stream.




Reference: U.S. Geological Survey, 7.5 Minute Quadrangle, Syracuse East(1977),Syracuse West(1978), New York



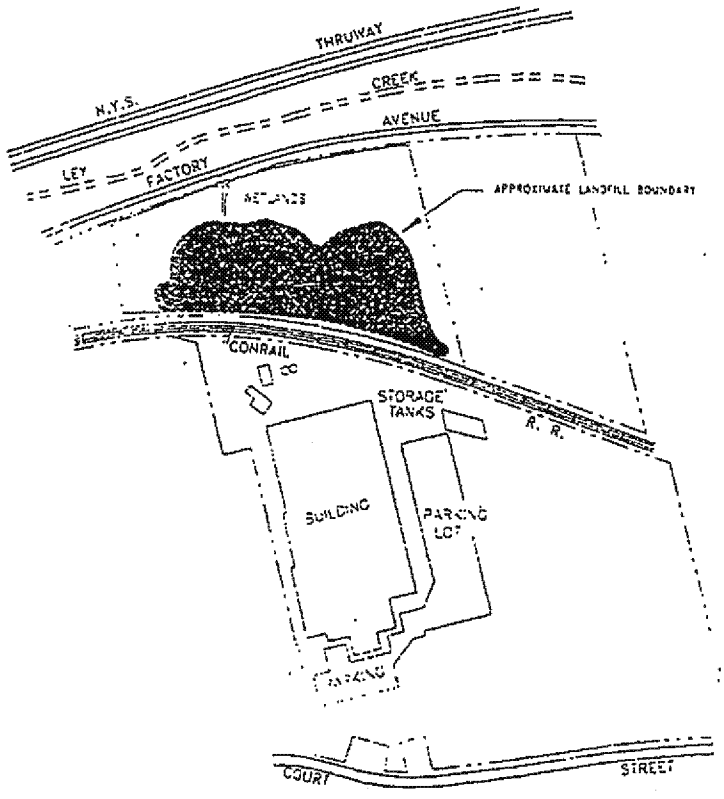

SYRACUSE CHINA LOCATION

DIVISION OF HAZARDOUS WASTE REMEDIATION

REVISED DATE: 03/05/96

DRAWN BY:
STEVEN M. SCHARF, P.E.

FIGURE 1




LEGEND

SYRACUSE CHINA PROPERTY LINE

APPROXIMATE LIMITS OF FILL

0 400 800

SCALE IN FEET

SYRACUSE CHINA LOCATION

DIVISION OF HAZARDOUS WASTE REMEDIATION

REVISED DATE: 3/15/96

DRAWN BY: STEVEN M. SCHARF, P.E.

NYSDEC SITE ID No. 7-34-053

FIGURE 2

October 1994: Syracuse China signed a consent order, Index No. A601408802, to develop and implement a Remedial Investigation/Feasibility Study (RI/FS) pursuant to Article 27, Title 13.

October 1995: Consent Order Index No C7-5125-94-08, was signed. This order resolved Syracuse China's alleged liability for penalties for alleged past violations of the air, water, wetlands, and hazardous and solid waste programs. The order refers to the Title 13 process for remediation of the landfill and wetlands.

## SECTION 3: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant potential threat to human health and/or the environment, the Syracuse China Corporation has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

### 3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted in 2 phases. The first phase was conducted between November 1994 and May 1995; the second phase during August, 1995. A report entitled Remedial Investigation Report, December 1995 has been prepared describing the field activities and findings of the RI in detail.

The two phases of the RI included the following activities:

- Magnetometer survey to determine whether buried drums exist in the landfill.
- Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.
- Excavation of test pits in the landfill to investigate anomalies identified in the magnetometer survey.
- Surface water and sediment samples in the adjacent regulated wetland.
- Wetlands cover type delineation and ecological assessment.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Syracuse China site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4046 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil. The NYSDEC Technical Guidance for Screening Contaminated Sediments is used for surface water sediments.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). For comparison purposes, SCGs are given for each medium.

### 3.1.1 Nature of Contamination:

As described in the RI Report, many soil, groundwater, surface water and sediment samples were collected at the Site to characterize the nature and extent of contamination. The RI included sampling for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and poly-chlorinated biphenyls (PCBs), cyanide based compounds and inorganics (metals). The primary contaminant of concern (COC) is lead, which is present at characteristic hazardous waste levels, and to a lesser extent the metals, iron, cadmium, mercury, arsenic, zinc, copper, chromium, silver and manganese. Lead is the COC which will define the areas requiring remediation for the landfill, settling pond sludges, and wetland sediments and surface water. No significant concentrations of VOCs, SVOCs or PCBs were noted in the RI.

### 3.1.2 Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in the landfill, groundwater, wetland, sediment and surface water and compares the data with the proposed remedial action levels (SCGs) for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

#### Landfill Waste

Soil borings were drilled into the landfill to characterize the fill material. From these borings twelve samples were analyzed for Extraction Procedure (E.P.) toxicity with nine of twelve reported concentrations ranging from 4.1 to 27 ppm for lead, with an average concentration of 17 ppm. The level of lead defining a sample as characteristic hazardous waste is 5 ppm.

Additional soil borings in the western half of the landfill revealed the fill thickness to range from 16-28 feet. Soil borings in the vicinity of the settling ponds on the eastern portion of the landfill indicated four feet of fill material.

The waste materials are generally both buried and exposed to the surface. In addition to representing potential health and environmental exposure, the need for solid waste corrective actions to address alleged violations was identified by the October 1995 Consent Decree.

#### Soils

Soil borings were also drilled into the landfill berms and for monitoring wells in areas outside the landfill. Soil samples were taken from each soil boring and analyzed for volatiles, semivolatiles, pesticides/ polychlorinated biphenyls (PCBs) and cyanide compounds. No significant levels of these compounds were detected. The soils were also analyzed for metals including iron, barium, copper, lead, magnesium, nickel, cadmium, chromium, silver, zinc, mercury and arsenic. Lead levels in soil ranged from 6.8 to 426 ppm at varying depths. The soil samples revealed that only a few iron and zinc results exceeded the NYSDEC TAGM Cleanup Criteria for soils.

Sediments

The sediments in the wetlands adjacent to the settling ponds, which discharged to the wetlands, were found to be highly contaminated with lead. This was expected since the pond sludges contain lead at a level that makes the pond sludge a characteristic hazardous waste due to failure of the EP toxicity test. Lead concentrations in the wetland ranged from 51.9 to 6010 ppm, with an average concentration in 15 samples of 3381ppm. Other metals were also present in some of the sediment samples and while they appear less frequently and at lower concentrations then lead, are present at elevated levels with respect to the sediment screening guidance. These other metals, mercury, zinc, silver, nickel, antimony, arsenic, copper, iron, manganese and chromium were identified coincident with the elevated lead, therefore lead will be considered the indicator of impacted sediments.

Groundwater

The analytical results for groundwater indicated low levels of several VOCs in the groundwater, and all but one were below the NYSDEC groundwater standard. One compound, xylene, was detected at 9 ppb which was only slightly above the groundwater standard of 5 ppb. No pesticides, PCBs or cyanide compounds were detected in groundwater samples. This was not the case for lead, iron, magnesium, manganese, sodium, zinc, arsenic, copper and vanadium. Overall, the results show that groundwater is increasing in lead concentrations as it passes beneath and through the landfill material, with concentrations ranging from nondetect to 292 ppb. The groundwater standard for lead is 25 ppb.

Groundwater in Onondaga County is typically hard water which exhibits naturally occurring high concentrations of iron, manganese, sodium and magnesium due to the geologic composition of the shale bedrock and glacial overburden material. The concentrations of these metals reported in the groundwater at this site are within the expected background ranges for Onondaga County, and are not considered to be attributable to the landfill.

Surface Water

The sample analytical results for metals identified lead and zinc above the NYSDEC surface water quality standards. The surface water standard for lead was calculated to be 6.4 ppb based on a combined water calcium and magnesium hardness of 200 ppm. The highest concentration of lead detected was 103 ppb detected near the SPDES outfall, with lead ranging from 22 to 103 ppb in the remaining samples. The low levels of VOCs found in the surface water, such as bromodichloromethane, are laboratory contaminants and not attributable to the site.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 7.0 entitled "Risk Assessment" of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Off-site exposure is expected to be low under current or future conditions. Lead was detected in surface water in the wetland area. Surface water from the wetland ultimately discharges to Ley Creek; however, minimal sediment transports from the wetland to Ley Creek is expected.

The wetland area and Ley creek are not expected to be routinely used for recreation or fishing. Although Ley Creek is a Class B stream, the fish and wildlife impact analysis report indicated this area did not support a substantial fish population and the area has limited access by the general public. Nevertheless, individuals fishing, wading or swimming in Ley Creek or the wetland area, could be exposed to lead.

Current and future exposures to on-site workers and off-site residents are not expected to pose an unacceptable risk based on the limited exposure potential and extent of release. Concentrations of VOCs detected in groundwater, surface water and sediment were below New York State standards and guidance values.

Lead and zinc were identified as contaminants of concern (COC) in samples collected from the wetland area adjacent to the site. Under current site conditions, on-site exposure is limited. Workers collecting samples from the settling pond outfall could potentially come in contact with landfill soil, surface water, sediment and soils. The limited exposures reasonably expected to occur under these conditions do not likely pose an unacceptable risk. Residents living near the site may use Ley Creek for fishing and swimming; however, the available data indicate that these activities are unlikely. Nevertheless, the USEPA Integrated Exposure Uptake BioKinetic (IEUBK) model was used to assess potential exposure to lead via fish ingestion. The results of the model indicated that lead in fish posed little risk to local populations even at relatively high dietary levels (5 to 10 percent of total meat diet).

### 3.3 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

The pathways for environmental exposure have been identified as the wetland sediments and surface water. The site sediments exceed the NYSDEC Sediment criteria for two categories the lowest observable effect level (LEL) and the severe effect level (SEL) for lead, in most samples. Lead, cadmium, mercury, chromium, arsenic, iron, silver, copper and zinc exceeded the LEL in some or most of the wetland sediments adjacent to the landfill. The inorganics, arsenic and copper exceeded the severe effect level for some of the sediment samples taken at the site.

## SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and the Syracuse China Manufacturing Company entered into a Consent Order on October 20, 1994. The Order obligates Syracuse China (the Potentially Responsible Party) to implement a Remedial Investigation/ Feasibility Study for the site. Upon issuance of the Record of Decision (ROD) the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

The following is the chronological enforcement history of this site.

Orders on Consent

| Date | Index | Subject |
|---|---|---|
| 10/20/94 | A6-0140-88-02 | Implementation of a Remedial Investigation/Feasibility Study (RI/FS) |
| 10/11/95 | C7-5125-94-08 | Alleged violations of Environmental Conservation Law and Title 6 |

## SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable any significant threat to the environment resulting from the contamination present within the soils/waste on site and/or potential generation of leachate within the fill mass.
- Eliminate the threat to the environment posed by the contaminated sediments within the adjacent wetland.
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils, sediments and wastewater sludges on site.
- Eliminate the potential for direct human or animal contact with the solid wastes, contaminated soils, sediments and wastewater sludges on site.
- Mitigate the potential impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC), to the extent practicable.

**Table 1**
**Nature and Extent of Contamination**

| MEDIA | CLASS | CONTAMINANT OF CONCERN | CONCENTRATION RANGE | FREQUENCY of EXCEEDING SCGs | SCG |
|---|---|---|---|---|---|
| Groundwater | Inorganics | Lead | ND - 292 ppb | 9 of 21 | 25 ppb |
| | | Copper | ND - 356 | 3 of 16 | 200 |
| | | Cadmium | ND - 3 | 0 of 16 | 10 |
| | | Chromium | ND - 132 | 7 of 16 | 50 |
| | | Silver | ND - 2.5 | 0 of 16 | 50 |
| | | Arsenic | ND - 49 | 7 of 16 | 25 |
| | | Zinc | ND - 461 | 3 of 16 | 300 |
| | | Mercury | ND - 20 | 1 of 16 | 2 |
| Surface Water | Inorganics | Lead | 20 - 315 ppb | 14 of 14 | 6.4[a] ppb |
| | | Copper | ND - 16 | 0 of 14 | 21.3[a] |
| | | Cadmium | ND | 0 of 14 | 2.0[a] |
| | | Chromium | ND - 4.3 | 0 of 14 | 11[a] |
| | | Silver | ND - 2.7 | 3 of 14 | 0.1[a] |
| | | Arsenic | ND - 1 | 0 of 14 | 190[a] |
| | | Zinc | 13 - 70 | 0 of 14 | 148[a] |
| | | Mercury | ND - 16 | 1 of 14 | 0.2[a] |
| Soils | Inorganics | Lead | 2.3 - 426 ppm | 0 of 9 | 500 ppm |
| | | Copper | ND - 16.9 | 0 of 9 | 25 |
| | | Cadmium | ND | 0 of 9 | 10 |
| | | Chromium | 3.3 - 11.1 | 0 of 9 | 50 |
| | | Silver | ND | 0 of 9 | SB |
| | | Arsenic | 1 - 5.9 | 0 of 9 | 7.5 |
| | | Zinc | 14.7 -36.7 | 8 of 9 | 20 |
| | | Mercury | ND | 0 of 9 | .1 |

[a] Based on hardness of water
SB - Soil background

Table 1 (cont.)
Nature and Extent of Contamination

| MEDIA | CLASS | CONTAMINANT OF CONCERN | CONCENTRATION RANGE | FREQUENCY of EXCEEDING SCG | SCG (ppb) |
|---|---|---|---|---|---|
| Landfill Waste[b] | Inorganics | Lead | ND - 27 ppm | 9 of 12 | 5 ppm |
| Sediments | Inorganics | Lead | 51.9 - 6010 ppm | 15 of 16[d] | 31\110[c] |
| | | Copper | 3.4 - 154 | 1 of 14[d] | 16\110[c] |
| | | Cadmium | ND - 3.7 | 0 of 14[d] | 0.6\9[c] |
| | | Chromium | 3.2 - 32.1 | 0 of 14[d] | 26\110[c] |
| | | Silver | ND - 31.8 | 5 of 14[d] | 1.0\2.2[cb] |
| | | Arsenic | ND - 64.1 | 3 of 14[d] | 6\33[c] |
| | | Zinc | 57 - 796 | 1 of 14[d] | 120/270[c] |
| | | Mercury | ND - 1.1 | 0 of 14[d] | 15\1.3[b] |

[b]Sampling for this medium reflects E.P. Toxicity results and the SCG reflects the characteristic hazardous waste level.
[c]Lowest Observable Effect Level\Severe Effect Level from the Technical Guidance for Screening Contaminated Sediments
[d]These exceedences reflect SEL levels

## SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Syracuse China Site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Focused Feasibility Study, Syracuse China Landfill."

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

### 6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils, sediments, surface water and groundwater at the site. This Site was determined to represent a typical industrial landfill, therefore the presumptive remedy approach was considered appropriate for the FS. This determination is reflected in the alternatives presented below.

Alternative 1: No Action

| | |
|---|---|
| Present Worth: | $ 316,430 |
| Capital Cost: | $ 000 |
| Annual O&M: | $ 25,500 |
| Time to Implement | None |

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Limited Action.

| | |
|---|---|
| Present Worth: | $ 385,225 |
| Capital Cost: | $ 75,000 |
| Annual O&M: | $ 25,000 |
| Time to Implement | 3 months |

This alternative would provide limited action at the site involving institutional controls to restrict human exposure to the contaminants of concern. This alternative would restrict access to the public and any activities at the site, other than environmental monitoring. The access would be restricted by extending the present site fence all the way around the landfill area. Wildlife exposure to contaminants would not be addressed by this alternative.

Alternative 3A: Excavation, Relocation Covering with Soil Cap and Leaving Wetland Soil for Natural Attenuation

| | |
|---|---|
| Present Worth: | $ 1,171,634. |
| Capital Cost: | $ 849,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

This alternative would involve excavating and relocating sludge from the settling ponds and fill from the eastern portion of the landfill to the area to be capped, with dewatering of the sludge as necessary. Approximately 1.3 acres of the wetland area, shown on Figure 3, would be included in the material excavated in order to restore this area to the wetland elevations prior to landfilling. The contaminated wetlands sediments would be left in place.

The western landfill area and relocated material would be capped. The cap would not be fully consistent with Part 360, and would in general consist of gas collection as appropriate, a 24 inch thick soil cover and a 6 inch topsoil layer. All surface runoff from the site would be directed towards the adjacent wetlands. Long term operation, maintenance and monitoring would be implemented to insure the effectiveness of the remedy.

Alternative 3B: Excavation, Relocation, Covering with Geomembrane Cap, and Leaving Wetland Soil for Natural Attenuation

| | |
|---|---|
| Present Worth: | $ 1,479,634 |
| Capital Cost: | $ 1,157,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of alternative 3B would be the same as those for alternative 3A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 4A: Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap

| | |
|---|---|
| Present Worth: | $ 2,453,634 |
| Capital Cost: | $ 2,131,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

This alternative, in addition to the excavation and relocation under the cap of the same material described in Alternative 3A, would also include the area of wetland sediments identified in Figure 3. The wetland would be allowed to revegetate naturally, subject to the need to stabilize the soils through revegetation. In addition to dewatering of these materials as necessary for landfilling, this alternative would also include treatment of the excavated sludges using stabilization and/or solidification. The landfill cap would also be the same as alternative 3A. All surface runoff would be directed towards the adjacent wetlands. Long term operation, maintenance and monitoring would be implemented to insure the effectiveness of the remedy.

Alternative 4B: Excavation, On-Site Treatment, Relocation and Covering with a Geomembrane Cap

| | |
|---|---|
| Present Worth: | $ 2,762,634 |
| Capital Cost: | $ 2,244,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of alternative 4B would be the same as those of 4A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 5A: Excavation, Relocation and Covering with a Soil Cap

| | |
|---|---|
| Present Worth: | $ 1,241,634 |
| Capital Cost: | $ 919,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

Alternative 5A would be the same as Alternative 4A except that the excavated sludges and wetland sediments would be placed on the landfill without any treatment except for dewatering. Capping would prevent exposure to and leaching of the metals which are the contaminants of concern in the sludge and wetland sediments.

Alternative 5B: Excavation, Relocation and Covering with a Geomembrane Cap

| | |
|---|---|
| Present Worth: | $ 1,549,634 |
| Capital Cost: | $ ,227,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of alternative 5B would be the same as those of 5A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 6A: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap

| | |
|---|---|
| Present Worth: | $ 2,558,634 |
| Capital Cost: | $ 2,236,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

Alternative 6A would be the same as Alternative 4A, with the addition of an upgradient groundwater interceptor trench designed to intercept groundwater flow from the south into the landfill and depress the groundwater level below the fill. All surface runoff and the discharge from the collection trench would be directed to the adjacent wetland. The approximate extent of the interception trench is shown on Figure 4.

Alternative 6B: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Geomembrane Cap

| | |
|---|---|
| Present Worth: | $ 2,867,634 |
| Capital Cost: | $ 2,545,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of alternative 6B would be the same as those of 6A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 7A: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Soil Cap.

| | |
|---|---|
| Present Worth: | $ 1,346,634 |
| Capital Cost: | $ 1,024,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of Alternative 7A would be similar to Alternative 6A with the exception of the treatment of the excavated sludges prior to placement under the landfill cap. No treatment of this material would be required for Alternative 7A, as discussed in Alternative 5A.

**Alternative 7B: Installation of an Interceptor trench, Excavation, Relocation and Covering with a Geomembrane Cap**

| | |
|---|---|
| Present Worth: | $ 1,654,634 |
| Capital Cost: | $ 1,332,000 |
| Annual O&M: | $ 26,000 |
| Time to Implement | 6 months - 1 year |

The components of alternative 7B would be the same as alternative 7A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

## 6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

**The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.**

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The most significant SCGs for this site would be 6 NYCRR Part 360 (Solid Waste Management Facilities), 6 NYCRR Parts 700-705 (Groundwater Standards) and the NYSDEC DFW sediment criteria. Alternatives 1, 2, and 3A and 3B would not meet SCGs for either some or all of these SCG's. Alternatives 3B, 4B, 5B, 6B and 7B would meet the requirement for landfill closure set forth in Part 360, however, the A series of these alternatives would not unless a variance to the low permeability barrier requirement were to be granted.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

   Alternative 1 would not provide any additional protection to human health, however no existing and only potential future exposures have been identified. The remaining alternatives would be protective of human health. Alternative 1 and 2 would also not address the alleged violation of ECL Title 6, Article 24 resulting from the filling of the wetland.

   Alternatives 1, 2, 3A and 3B would also not address the contaminated sediments in the adjacent wetland and therefore would not be as protective of the environment as would those alternatives that remove the sediments. Alternatives 4A, 4B, 5 A and 5B while addressing the sediments, would not prevent continued contamination of the groundwater from contact with the landfill waste. Alternatives

6A, 6B, 7A and 7B would protect groundwater as well, although by stabilizing the consolidated waste some increased assurance would be gained by Alternatives 6A/B, which would be the most protective of the environment.

**The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.**

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

   Alternatives 1 and 2 would have no short term impacts since no intrusive work would be required. Alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B would all have similar short term impacts associated with the excavation of fill material and the treatment pond sludges which would require adequate health and safety measures to insure protection of the community, the workers and the environment from any particulates or other releases generated during the excavation. All of these alternatives, with the exception of 3A/B, would also present short term impacts during excavation of the contaminated wetland sediments, however this is negligible in terms of the benefit derived. Alternatives 4A/B and 5A/B would not include upgradient groundwater interception, which would lessen the short term impacts of the remedies since they would not include trenching adjacent to the Conrail Tracks. Short term impacts would also be greater, due to worker and public exposure potentials, as a result to the additional handling required to provide treatment for Alternatives 4A/B and 6A/B.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

   Alternatives 1 and 2 would have no long-term effectiveness nor permanence since no substantive remediation would occur. Each of the other alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B would result in wastes and or treated residual remaining on site, however the magnitude of the impact from the remaining wastes would be minimized by consolidation of fill and contaminated materials, and proper closure of the landfill. The B series of these alternatives would include an impermeable geomembrane and would thus have greater effectiveness in minimizing leachate generation and groundwater protection. Alternatives 4A/B and 5A/B would not include groundwater interception and therefore would also have lower long term effectiveness and permanence with respect to continued contaminant loading to the groundwater and wetland. Alternatives 6B and 7B would not include treatment of lead contaminated sludge, as would 6A and 7A, and so would be somewhat less effective. However, once the site is capped and the groundwater is lowered, so that there is no longer contact with the fill material and the resultant leaching, further degradation of downgradient groundwater would not be expected. All four alternatives, 4B, 5B, 6B and 7B, would have a higher degree of permanence with respect to the landfill closure, as compared to the A series due to the geomembrane included in the cap. Each of the 4-7 alternatives would result in significant long term benefit to the environment since they would remove the contaminated sediments from the wetland.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 1 and 2 would not reduce toxicity, mobility or volume (TMV) of contaminants in the landfill or the wetland. All of the capping and consolidation alternatives would reduce the mobility of the contaminants from the landfill, with the B series to a greater degree due to the impermeable membrane. Alternatives 3A/B would not address the TMV of the wetland sediments, however the remaining alternatives would all remove the sediments resulting in a reduction in TMV relative to the wetland. A reduction in toxicity in terms of exposure and mobility of the contaminants of concern in the consolidated sludge and fill materials would be realized for Alternatives 3-7 since they would be placed under a low permeability cover in each alternative. Alternatives 4B and 6B, both of which would include stabilization of sludge materials before placement under the cap, would also reduce the mobility of the lead in the sludge. Alternatives 4A/B and 5A/B would not include groundwater interception, therefore would not reduce the TMV of inorganic contamination in the groundwater, to as high a degree as Alternatives 6A/B and 7A/B would.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternative 1 would require no implementation and Alternative 2 would only require a limited amount of fencing. Alternatives 3 A/B, 4A/B, 5A/B, 6A/B and 7A/B would all be readily implementable requiring no unique construction techniques for the consolidation and capping aspects of the work. Alternatives 6A/B and 7A/B would be somewhat more difficult to implement since they would include the groundwater interceptor trench and Alternatives 3A/B also would not require the excavation of the wetlands which would make implementation easier than 4-7 as well. Alternatives 4A/B and 6A/B would also be slightly more difficult to implement with respect to the stabilization required for the settling pond materials. None of the alternatives would face any significant administrative requirements which would limit their implementability.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The Responsiveness Summary included as Appendix A presents the public comments received and the Department's response to the concerns raised. The public comments received were supportive of the selected remedy, primarily seeking greater detail on the actual implementation of the remedy. A comment regarding possible alternative means of addressing the groundwater resulted in a modification of the description of the groundwater interception system to allow evaluation of alternative means of preventing or controlling lead contamination of the groundwater.

Table 2
Remedial Alternative Costs

| REMEDIAL ALTERNATIVES | CAPITAL COST | ANNUAL O&M | PRESENT WORTH |
|---|---|---|---|
| Alternative 1: No Action | $0 | $25,500 | $316,430 |
| Alternative 2: Limited Action | $75,000 | $25,000 | $385,225 |
| Alternative 3A: Excavation, Relocation, Covering with a Soil Cap and Leaving Wetland Sediment for Natural Attenuation | $849,000 | $25,000 | $1,171,634 |
| Alternative 3B: Excavation, Relocation, Covering with a Geomembrane Cap and Leaving Wetland Sediments For Natural Attenuation | $1,157,000 | $26,000 | $1,479.634 |
| Alternative 4A: Excavation, On-site Treatment, Relocation and Covering with a Soil Cap | $2,131,000 | $26,000 | $2,453,634 |
| Alternative 4B: Excavation, On-site Treatment, Relocation and Covering with a Geomembrane Cap | $2,440,000 | $26,000 | $2,762,634 |
| Alternative 5A: Excavation, Relocation and Covering with a Soil Cap | $919,000 | $26,000 | $1,241,634 |
| Alternative 5B: Excavation, Relocation and Covering with a Geomembrane Cap | $1,227,000 | $26,000 | $1,549,634 |
| Alternative 6A: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap | $2,236,000 | $26,000 | $2,558,634 |
| Alternative 6B: Installation of an Interceptor Trench, Excavation, On-Site Treatment Relocation and Covering with a Geomembrane Cap | $2,545,000 | $26,000 | $2,867,634 |
| Alternative 7A: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Soil Cap | $1,024,000 | $26,000 | $1,346,634 |
| Alternative 7B: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Geomembrane Cap | $1,332,000 | $26,000 | $1,654,634 |

## SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC has selected Alternative 7B: Installation of an Interceptor Trench, Excavation, Relocation, and Covering with a Geomembrane Cap, as the remedy for this site.

This selection is based upon the analysis of the eleven remedial alternatives for the Syracuse China Site. Alternative 7B will provide the best balance of the evaluation criteria and will satisfy NYSDEC Standards, Criteria and Guidance, of particular importance, closure of the landfill consistent with 6 NYCRR Part 360.

Alternative 7B will be protective of human health and the environment by ensuring that the current impacts to groundwater and wetlands sediments and surface water will be addressed.

This alternative will have a high degree of short term effectiveness, and will provide high long term effectiveness and implementable at a moderate cost, compared to 6B, while addressing the groundwater contact with the fill material. Even though this alternative will not directly reduce the toxicity and volume of contaminated materials, it will reduce their mobility in the general environment and will also reduce the toxicity and volume of lead in the groundwater and the wetlands and will address the risks associated with the site.

The estimated present worth cost to implement the remedy is $1,654,634. The cost to construct the remedy is estimated to be $1,332,000 and the estimated average annual operation and maintenance cost for 30 years will be $26,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and to provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Excavation and consolidation of the contaminated settling pond sludges onto the western portion of the landfill in the area to be capped.

3. Excavation and consolidation under the cap of approximately 1.3 acres of the landfill to restore the Class 2 wetland to the original area prior to encroachment by landfilling. This will resolve alleged existing Article 24 violations. The approximate area which will be excavated is shown on Figure 3.

4. Excavation and consolidation under the cap of additional landfill materials from the eastern portion of the landfill which may be beyond the cap limits.

5. Excavation and consolidation under the cap, of the contaminated wetland sediments in the approximately ten acre area shown on Figure 3. This area and the depth of contamination will be further defined during the pre-design phase of the project. This definition will be based upon consideration of, but not limited, to: data generated from the evaluation of topographic elevations and a delineation of the wetlands; additional analytical testing in the wetland to confirm the areal and vertical limits of contamination; a sampling program to establish prerelease levels or background, particularly with regard to the depth of contamination; toxicity testing; plant uptake studies and/or a

refinement of the ecological risk assessment included in the Feasibility Study. In areas where contaminated sediments exceed the estimated 1-2 foot depth, covering of the lead contaminated sediments with sufficient clean soil to mitigate exposure could be considered instead of excavation.

Restoration of the wetland will be subject to the need to stabilize the soils. The wetland will be allowed to revegetate naturally with only initial reseeding, or other appropriate revegetation implemented to control erosion. The swale north of Factory Avenue will be sampled during predesign but is expected to be covered and/or lined as part of the Ley Creek PCB Dredgings Site Remedial Program. If this should not be addressed by the Ley Creek project it will be addressed, if needed, as separate action. All wetlands work will require approval from the U.S. Army Corps of Engineers and comply with NYSDEC Article 24 requirements.

6. Dewatering of the sludge and wetland sediments, as required to comply with the USEPA SW-840 Method 9045, Paint Filter Liquid Test, or the regulatory requirements for placement of material in the landfill in effect at the time of the implementation of he remedy.

7. Installation of an upgradient groundwater interception system, which will be designed to intercept groundwater passing through the fill and lower the water table below the fill, to prevent leaching of lead into the groundwater Discharge from the trench will be directed to the wetland. The approximate location of this trench is shown on Figure 4. Alternative means to prevent the leaching of lead into the groundwater from that identified above, such as removal of fill from areas below the water table or a leachate collection system, may be evaluated during the design phase in place of the groundwater interception system.

8. Capping of the landfill consistent with the applicable requirements of 6 NYCRR Part 360, which will include but not be limited to: (1) installation of a 40 mil geomembrane cap; (2) installation of surface drainage; (3) minimum slopes of 4 percent and maximum of 33 percent slopes: (4) performance of an explosive gas survey and hydrogen sulfide generation survey and if necessary design of a landfill gas collection system based upon these results; (5) long term maintenance and monitoring. The cap will be designed so that no encroachment on the wetland area will result.

9. Reconstruction of the settling ponds, as necessary to maintain the current wastewater discharge. SPDES permit compliance will be maintained during the remediation.

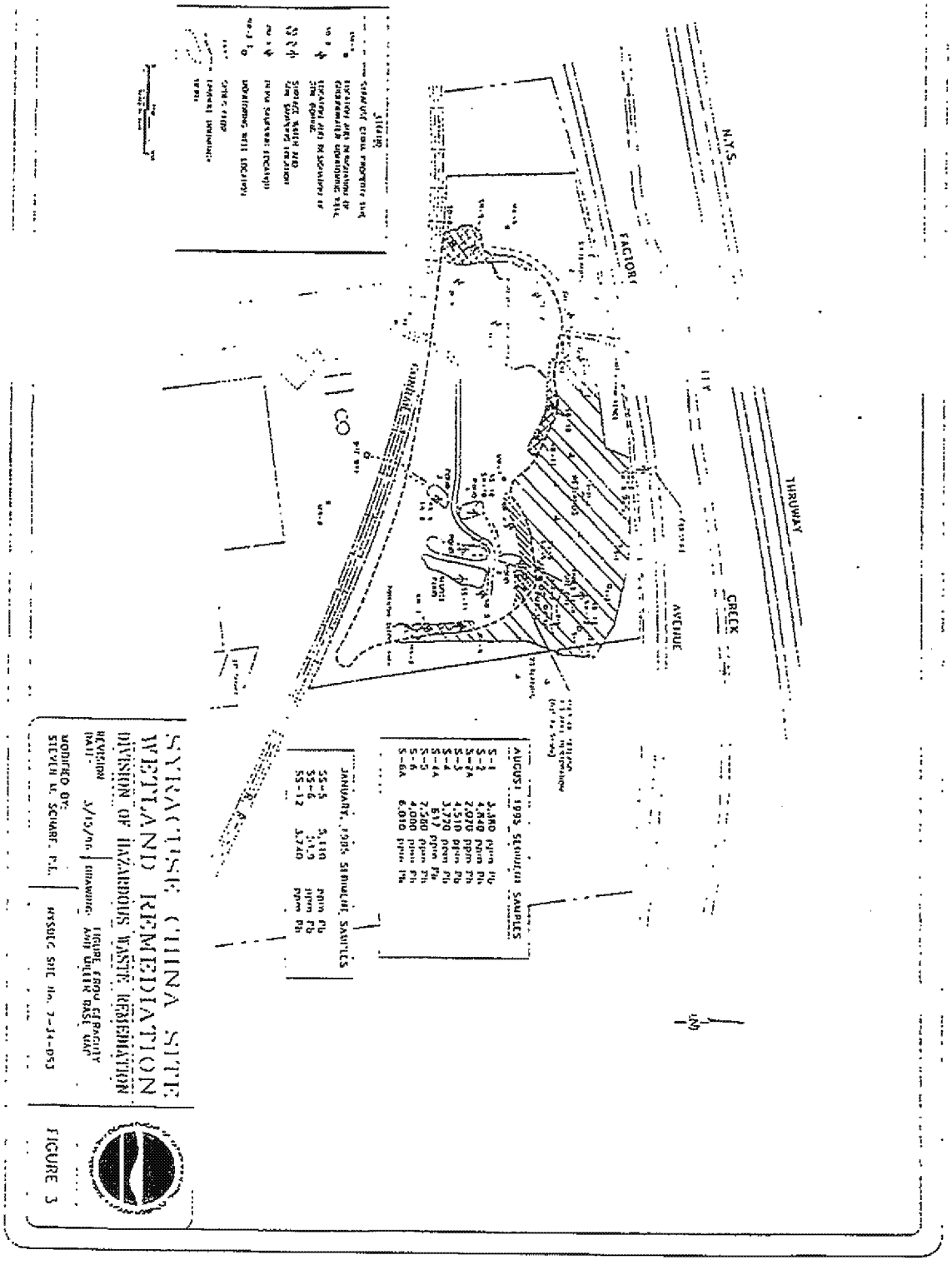
10. Since the remedy will result in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site.

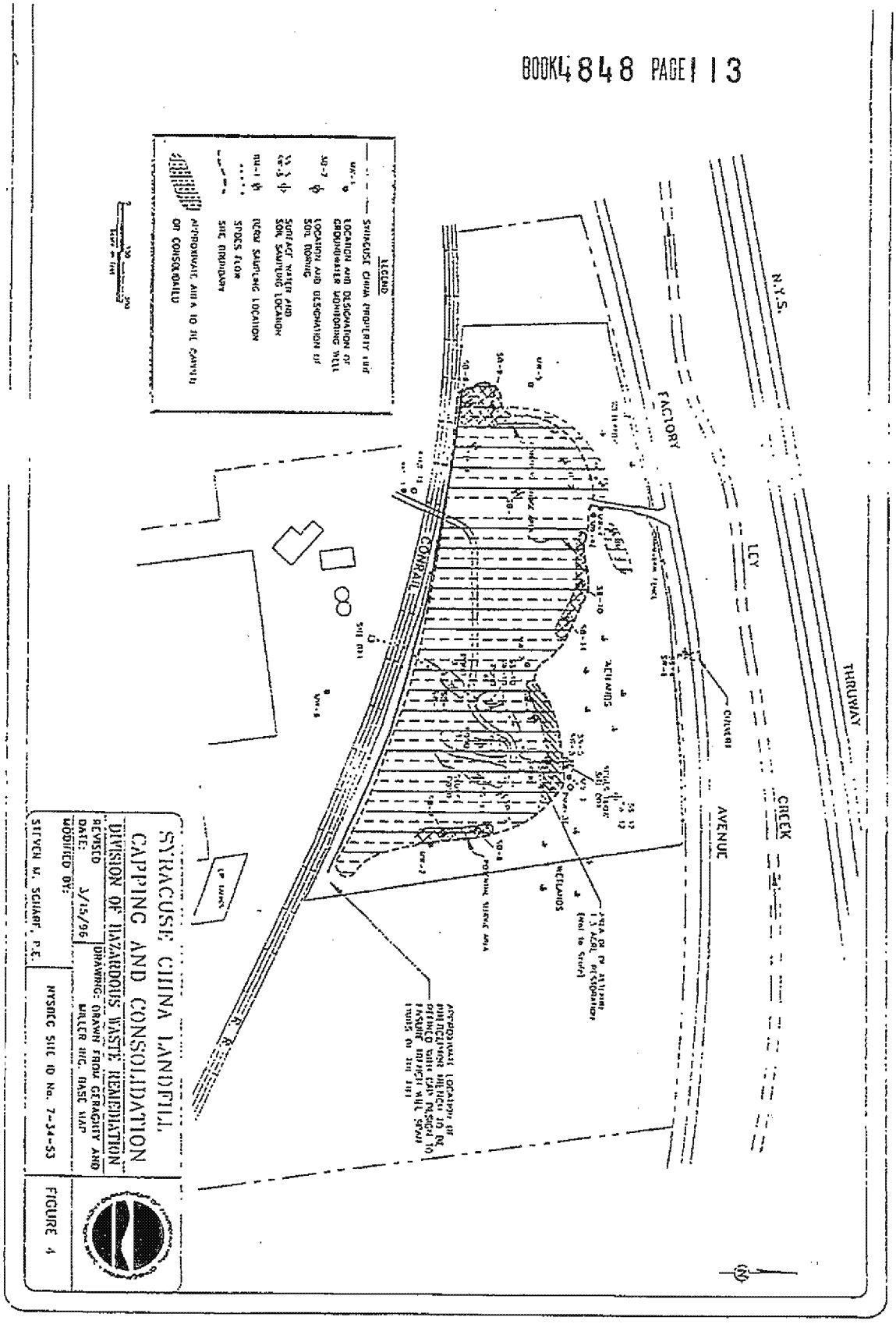
## SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.

- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- A Fact Sheet was prepared and sent to citizens in February 1996 announcing the availability of the Remedial Investigation Report and the Proposed Remedial Action Plan at document repositories. A public meeting being held to discuss those documents was also announced.
- A public meeting was held on February 28, 1996 in Syracuse to discuss the results of the Remedial Investigation/Feasibility Study and the proposed action to be taken as outlined in the PRAP.
- In March 1996 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.





Appendix A

# RESPONSIVENESS SUMMARY

**Syracuse China Site**
**Proposed Remedial Action Plan**
**Town of Salina (T), Onondaga County**
Site No. 7-34-053

The Proposed Remedial Action Plan (PRAP) for the Syracuse China Site was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 20, 1996. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Syracuse China Site. The preferred remedy is capping of the landfill consistent with the requirements of 6 NYCCR Part 360, installation of an upgradient groundwater interception trench and the excavation and consolidation of fill comprising the eastern portion of the landfill, contaminated treatment pond sludges and contaminated sediments from the adjacent wetland, under the cap.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on February 28, 1996 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from the Syracuse China Corporation.

The public comment period for the PRAP closed on March 22, 1996.

This Responsiveness Summary responds to all questions and comments raised at the February 28, 1996 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC responses:

COMMENT 1: Does any runoff from the site go north of Factory Avenue?

RESPONSE 1: Drainage from the site is to the wetlands adjacent to the landfill and the water from the wetland does flow to the north through a culvert beneath Factory Avenue, eventually discharging into Ley Creek. However, a sediment sample from the vicinity of the culvert is below the level of the

NYSDEC's Division of Fish and Wildlife (DFW) Severe Effect Limit (SEL) but is above the lowest effect level (LEL) for lead, indicating that the contamination does not appear to have migrated beyond this point. It appears that the wetland has acted as a further settling pond, settling out any lead from the discharge to the wetland before it passed on to the north. This will be confirmed by further testing during the predesign phase.

COMMENT 2: How deep did the contamination go?

RESPONSE 2: As part of the RI, sampling was conducted in the top foot of the wetland sediments. Based upon the depositional nature of the source of contamination it is not expected to extend significantly below the top foot, except possibly in the immediate area of the SPDES outfall. For estimating purposes one foot was assumed, however, further testing during the design will confirm the depth to be remediated.

COMMENT 3: Are there any health impacts to the residential areas west of the site and south of Factory Avenue and the railroad tracks?

RESPONSE 3: The site in its present state does not pose an existing health threat, only a potential health threat would exist if land use changed which increased contact with the sediments, sludges from the settling ponds and/or some of the landfill materials. The contaminants at the site are heavy metals, primarily lead, which have limited potential for migration to off site areas. There have been no volatile organic chemicals of concern identified at this site, which could volatilize or otherwise impact off site areas. During remedial construction, community air monitoring will be conducted to assure that remedial construction does not create unacceptable conditions, related to dust which could carry particulates from the site. Controls will be implemented as necessary during any fill relocation to control the generation of dust .

COMMENT 4: What about years ago when we were going through the landfill? I was a firefighter and we would come back from fighting a fire there covered with white dust.

RESPONSE 4: The materials in the Syracuse China Landfill are for the most part not combustible municipal waste, but rather inert clays, broken china and china production residuals. Thus any material which may have burned would not likely have been related to the industrial waste in the landfill. Lead is not

absorbed through the skin, so contact with landfill materials should not have resulted in an increased exposure. While inhalation was a possibility, effectively, it is not likely that a fire would have involved the lead present in the fill materials.

COMMENT 5: What about the right-of-way of the high tension lines? Previously an old tower collapsed and required replacement, how will the presence of these affect landfill work?

RESPONSE 5: The remedial work at the site should not interfere with the overhead power lines, but they will have to taken into account when operating heavy equipment and working around the stanchions. The remedial design will identify the need to relocate any fill present in the vicinity of the power line towers and any other special construction requirements necessary to install the cap or maintain the right-of-way (easement). These considerations will be addressed with the utility.

COMMENT 6: Will the road across the railroad tracks still exist?

RESPONSE 6: The existing road or an alternative access point to the landfill area will be required to mow the grass on the cap, monitor wells and provide other needed maintenance for the settling ponds or the cap.

COMMENT 7: Niagara Mohawk had to close their railroad crossing, will Syracuse China have to as well?

RESPONSE 7: This is an issue which will be addressed by Syracuse China with the railroad during the design phase. All involved parties will be asked to review the remedial design, as it relates to them, and any concerns raised will be addressed at that time.

COMMENT 8: What is going to happen to the contaminated groundwater?

RESPONSE 8: The groundwater interception trench will be designed to lower the groundwater to prevent contact with the fill The landfill cap will reduce infiltration and thus reduce the potential for migration of leachate to the groundwater. Combined these measures are expected to reduce inorganic contamination to levels that represent background conditions in the area.

The existing groundwater in the vicinity of the landfill which exhibits some elevated levels of lead will be allowed to attenuate over time now that the source of contamination from the landfill is being addressed.

COMMENT 9: Is there anyone the groundwater can effect? What are the environmental impacts?

RESPONSE 9: There have been no users of the groundwater identified in the vicinity of the landfill and no elevated levels of lead have been identified in the Ley Creek surface water.

COMMENT 10: What is happening to the rest of the wetlands besides the 1.3 acres to be restored?

RESPONSE 10: Based upon the current delineation, approximately six acres of the wetland surrounding the landfill (as shown on Figure 3 of the ROD) will be excavated to address lead contaminated sediments. There will be additional testing of wetlands during remedial design, to better define the area and the depth to be excavated. Lead contamination is expected to be found in the top foot of the wetland sediments on average .

COMMENT 11: One foot does not seem very deep for 40 years of settling?

RESPONSE 11: The source of lead was the discharge from the plant to the settling ponds which were intended to settle out the material before discharge. Lead is present at high levels in the sludge from these ponds and some portion of this was discharged and has settled out in the wetland. The lead that carried through the settling ponds was most likely present in the fine particulates that would not have settled out until last and would not have represented a high volume of material. Soil samples did not show evidence of a deep layer of these fine particles, which would have tended to coat the natural sediments limiting downward leaching or migration. However, analytical testing during design and confirmatory sampling during construction will substantiate the depth to be removed or covered by the remedy.

COMMENT 12: How many acres is the landfill?

RESPONSE 12: The landfill area, as shown on Figure 3 of the ROD, is approximately 13 acres.

COMMENT 13: What is the next step?

RESPONSE 13: The NYSDEC has evaluated the comments received and prepared this responsiveness summary. The Proposed Remedial Action Plan (PRAP) has been finalized into the Record of Decision (ROD). Once the Rod is issued the NYSDEC will begin negotiations with Syracuse China to implement the selected remedy.

COMMENT 14: So is Alternative 7B all ready selected?

RESPONSE 14: The PRAP identifies Alternative 7B as the NYSDEC and NYSDOH preferred alternative and it was also recommended by Syracuse Chin in the Feasibility Study. This alternative was proposed based upon the detailed analysis of all the alternatives summarized in the PRAP. Unless public comment results in a reevaluation of the alternatives evaluated by the PRAP, the proposed remedy will be selected by the ROD.

COMMENT 15: Who will pay for the remedy?

RESPONSE 15: It is anticipated that Syracuse China will pay for the remedy. After the ROD is signed, the NYSDEC will look to negotiate a consent order with Syracuse China to perform the remedial work.

COMMENT 16: What municipal wastes are in the landfill?

RESPONSE 16: The landfill has been there a long time and before 1969 there were no gates and allegedly some people dumped their trash. However, this landfill was primarily operated as an industrial and not a sanitary landfill, although some plant trash undoubtedly ended up there also, so municipal waste should represent a relatively small percentage of the volume in the landfill. Twelve test pits were dug based on the magnetometer survey across major areas of the landfill looking for buried drums. Metal debris was found along with massive amounts of scrap or broken china and broken molds. Most of the waste material encountered during the RI appeared inert and was obviously the byproducts of china manufacturing, which supports that

municipal waste does in fact represent only a small fraction of the landfill volume.

COMMENT 17: Does Syracuse China use this landfill?

RESPONSE 17: No, not since 1994.

COMMENT 18: What does Syracuse China do with the waste now?

RESPONSE 18: Approximately 90 percent of the manufacturing waste streams are reported to be recycled. The rest goes to a permitted commercial or municipal landfill.

COMMENT 19: Huge piles of waste china are present behind Sehr Park and kids sometimes play in it.

RESPONSE 19: The area in question is not part of the park. The "piles of china" are part of an earthen berm, which includes a significant amount of broken china. It is located on Syracuse China property and is not part of the landfill project or included in the hazardous waste site. However, this comment is being brought to the attention of Syracuse China by this responsiveness summary.

COMMENT 20: Is there any danger in the berms?

RESPONSE 20: Not due to concerns relative to hazardous waste, but possibly the broken china could represent a physical hazard. The lead in the landfill and wetlands is a result of the settling pond wastes. Lead in china has been studied and is not reported to leach.

COMMENT 21: The Little League fields are located on Syracuse China property and there are areas where china scraps are coming through the ground.

RESPONSE 21: This comment has also been brought to the attention of Syracuse China.

COMMENT 22: Then the major concern here is the wetlands?

RESPONSE 22: Yes, the wetlands contamination represented a significant environmental concern as did the presence of the hazardous waste in the landfill. Syracuse China would have been required to close the landfill regardless of the presence of hazardous waste due to NYSDEC Solid Waste Regulations, 6 NYCCR Part 360.

COMMENT 23: Are there other contaminants than lead?

RESPONSE 23: Yes, but lead is considered the indicator. Generally, whenever inorganic contamination was found lead was always the highest in concentration, although other heavy metals such as, arsenic, cadmium, chromium, copper, mercury, silver and zinc, were also identified at levels of concern.

COMMENT 24: What is the timetable for completing the work at this site?

RESPONSE 24: The timing of the project is dependent on the progress of consent order negotiations. Syracuse China has been cooperative to date and the State has no reason to believe this cooperation will not continue. We hope to proceed quickly with a consent order and assuming negotiations can proceed in parallel with the design construction could start in 1997. Construction will take about one year to complete. If negotiations are protracted or the design start is delayed until a consent order is executed, construction start could be delayed until 1998.

COMMENT 25: When does the design phase start?

RESPONSE 25: The actual start of the engineering design may have to wait for the completion of consent order, which typically can take from six to nine months. However, the design could proceed simultaneous with the negotiation of the Consent Order if Syracuse China agrees, once the ROD is signed.

COMMENT 26: Are there any concerns with children playing in Sehr Park?

RESPONSE 26: No, the landfill is not located immediately adjacent to the park and no evidence of migration of contaminants from the landfill to the park was identified during the RI. Syracuse China will perform operation and maintenance activities to insure the integrity of the remedy.

The following comments were included in a letter dated March 15, 1996 received from Mr. Robert S. McEwan, Jr. of Nixon, Hargraves, Devans and Doyle on behalf of the Pfaltzgraff and Syracuse China Companies:

COMMENT 27: The PRAP refers to the wetland soils as "sediments". The soils located in the wetland located at the site are not sediments. The term "sediment" is defined generally as a solid material which settles to the bottom (or other surface) of a body of water. In contrast, the solid material within which most of wetland vegetation grows is commonly referred to as "soil." This usage is carried over into the federal and New York regulatory programs designed to protect wetlands. Neither definition contains the term "sediment." This is not to say that there cannot be sediment within a wetland. Where a wetland contains an open water body, then sediment is typically found at the bottom of that open water body. In the wetland at the site, only one small area is classified as "open water." None of the samples collected within the wetland were collected in this open water area. In our discussions with NYSDEC, and as reflected in the RI/FS reports, the samples collected in the wetlands are appropriately referred to as "soil" samples, whereas samples collected in the settling ponds are appropriately referred to as "sediment" samples.

RESPONSE 27: As discussed in the response to comment 11 above, the contamination in the wetland appears to be the result of deposition of the sediments which carried over from the treatment settling ponds. Therefore the use of the term sediment is accurate and appropriate in this instance since the areas in question are routinely inundated. The RI also characterized these samples as sediments and for each sampling location in the wetland also included a surface water sample. In general the NYSDEC considers the Sediment Guidance Criteria to be applicable when evaluating contaminant levels in wetlands regardless of whether the material in question can be defined as sediment or soil. The Criteria are considered applicable for screening and evaluating the potential for exposure or impact to wetland flora and fauna from contaminants present in the stratum in question, whether that stratum be termed soil or sediment.

COMMENT 28: Applicability of NYSDEC Sediment Screening Guidance: As we have advocated to NYSDEC, the use of the Guidance as a Standard, Criteria or Guidance ("SCG") for the site is not proper. As discussed above, the samples collected in the wetland at the site are "soil" not "sediment" samples as those terms are used in both common and regulatory usage. By listing

the Guidance as an SCG for the site in the PRAP, the Severe Effect Level ("SEL") for lead, which is 110 ppm, may be viewed as the appropriate cleanup level. The lead SEL contained in the Guidance has no relevance to the lead levels found in the wetland soils at the site. Therefore, the lead SEL should not be considered as a target cleanup goal for the site and the Guidance should not be considered to be an SCG. Even if significant portions of the wetlands were underlain with sediments, the 110 ppm screening level in the Guidance would not be an appropriate cleanup number for the wetlands at the site. As the Guidance provides,

> [r]isk assessment, risk management, and the results of further biological and chemical tests and analyses are vital tools for managing sediment contamination. To view sediment criteria in a one-dimensional, go/no go context is to miss potential opportunities for resource utilization through appropriately identified and managed risk.

Thus, even if true sediments existed in sufficient quantities in the wetlands at the site, the SEL included in the Guidance should characterize only as a level "to be considered" (TBC"). As a TBC document The Guidance can be used as it was designed; a screening tool against which sediment data may be compared to determine if a more detailed evaluation should be done. However, because the site wetlands contain soils, not sediments, the use of the NYSDEC Guidance, even for comparison (such as in Table 1 of the PRAP) is inappropriate.

RESPONSE 28: The Sediment Screening Guidance was used, as stated in this comment and as in its' title, as a guide for screening data gathered in the wetland to determine the potential for environmental impacts related to the contaminants of concern for the site. Given the high levels of lead present in the wetland the environmental impact is readily apparent whether the impacted media is in fact sediment or soil. The soil /sediment issue is also addressed in response to comment 27.

COMMENT 29: The FS examined other possible benchmarks against which the wetland soil data could be meaningfully compared. One such benchmark reviewed was the allowable lead levels in land application of sludge under federal regulation. While this regulatory level is not directly comparable to

conditions at the site, the EPA evaluation used to derive these limits is comparable and worthy of consideration.

**RESPONSE 29:** The NYSDEC DFW agrees that this data is not directly applicable to this Site and questioned the comparability of the findings regarding sewage sludge spreading on a farm field to the impacts in a wetland. Based upon the data presented to date, DFW does not consider these to be comparable situations, therefore the referenced guidance was not considered as applicable to a determination of acceptable lead levels in a wetland. The ROD provides for the evaluation of additional data to be generated during design, as well as the refinement of the ecological risk assessment performed for the site, which may include further evaluation of the referenced "benchmark".

**COMMENT 30:** As stated in the PRAP, the remedial goal for the wetland is to "[e]liminate the threat to the environment posed by the contaminated sediments within the adjacent wetland." (PRAP at 8). The FS recommends achieving this goal through reducing levels of lead and other heavy metals in wetland soils to levels which are protective of wildlife which may live or feed within the wetland. The fifth element of the preferred remedy selected in the PRAP is meant to address this goal and objective. The PRAP provides that a more precise delineation will have to be done to determine the area and depth of contamination within the six acre wetland depicted in Figure 3 of the PRAP. (PRAP at 16). The delineation described in the PRAP may provide the desired results if background soil lead levels are taken into account during the delineation process. Because background soils lead levels can be as high as 200-500 ppm in urban or suburban areas and/or near highways, we believe that lead background levels may be a significant factor in determining (1) the area within the wetland and (2) depth of wetland soil that will be subject to remediation.

**RESPONSE 30:** The use of background sample results was contemplated by the NYSDEC as one of the several types of data to be evaluated in the delineation of the wetland area for remediation detailed in Section 8 of the PRAP. As requested, the description of the evaluation process has been modified in Section 7 of the ROD, to specifically provide for sampling to assess predisposal conditions, or background, in evaluating the area and depth of the excavation of contaminated sediments in the wetland.

COMMENT 31: The preferred remedy provides for the installation of an interceptor trench "...designed to intercept groundwater passing through the fill and lower the water table below the fill, to prevent leaching of lead into the groundwater." (PRAP at 17). Based on the information submitted with the RI/FS, the extent that groundwater is in contact with the fill material, if any, has not been determined adequately. Although the cross-section drawings in the RI depict the base of the fill material in contact with the top of the water table, in some locations (RI, Figure 4) this depiction is based on available, but limited, data. These limited data have been interpolated to provide a presentation of hydrogeologic conditions at the landfill and do not reflect precise groundwater conditions at all locations in the landfill. In fact, soil borings and test pits excavated through the base of the fill material in several locations did not indicate the presence of groundwater in contact with the fill material. Additional data should be collected as part of the pre-design phase of the remediation to further define whether the fill material is in contact with the groundwater. Until this information is developed, it is premature to recommend that there is a need for the proposed groundwater interceptor trench as part of the preferred remedy.

RESPONSE 31: The Groundwater Interceptor Trench as included in the proposed remedy in the PRAP is the same as that proposed by the PRP in their feasibility study. While the NYSDEC agrees that the available data is somewhat limited, the presence of some portion of the landfill below the groundwater table is well established. Since other technologies or strategies exist for achieving the end result of the interceptor trench, such as relocation of the fill in areas below the groundwater table or collection of any leachate generated, the ROD has been modified to allow a further evaluation of data to best determine the means of achieving the required prohibition of the leaching of lead from the landfill into the groundwater. As proposed, the interceptor trench is still significantly less costly than other means of addressing the leaching of contaminants to the groundwater such as the solidification/stabilization treatment evaluated in alternatives 4 A/B and 6A/B.

COMMENT 32: In addition the findings in the PRAP regarding elevated lead levels in groundwater are based upon unfiltered sampling results. These results appear to form the basis for the conclusion that the interceptor trench is necessary. The PRAP reports only the total (unfiltered) metal groundwater analyses. The groundwater sampling results reported in the PRAP are not representative of dissolved concentrations of metals in groundwater at the site. In addition to the unfiltered groundwater sampling results referenced

in the PRAP, the RI/FS also provided filtered groundwater sampling results.

RESPONSE 32: The NYSDEC Division of Hazardous Waste Remediation has a long standing policy of requiring and accepting only unfiltered groundwater analytical results for Remedial Investigations, unless prior approval is granted by the NYSDEC based upon a determination that "samples of unacceptably high turbidity are unavoidable". This is as stated in DHWR TAGM #4015, " Policy Regarding Alteration of Groundwater Samples Collected for Metals Analysis", dated September 30, 1988. The TAGM also discusses the rationale for this decision, as well as, both State and Federal guidance supporting the policy. This issue was raised during the course of the RI, at which time the TAGM provisions was reviewed relative to the site groundwater condition and NYSDEC did not agree that sample turbidity warranted the use of unfiltered data, although filtered samples were also collected. While turbidity was greater than the 50 NTUs cited in the TAGM, no correlation between high NTU levels and elevated lead was apparent. Turbidity was fairly consistent in all wells, upgradient as well as downgradient and those with elevated lead levels versus those below standards.

COMMENT 33: The PRAP, at page 6, incorrectly sets forth that "the soil samples revealed that only a few iron, zinc and chromium results exceeded the NYSDEC TAGM cleanup criteria." The concentrations of metals detected are within the range of the recommended soil cleanup objectives and/or eastern United States background concentration for metals as established in TAGM 4046.

RESPONSE 33: While the concentrations did exceed the NYSDEC TAGM clean up criteria, it is recognized that they were also within background levels for the eastern United States as stated in the comment. Since this exceedence in soil was only noted in the PRAP and did not result in a recommendation for further action, a revision of this language in the ROD is not considered necessary in this case. Table 1 has however been revised as noted in this comment.

COMMENT 34: As indicated in the FS, the sludge and wetland soils will be dewatered, in accordance with the EPA SW-846 Method 9095, Paint Filter Liquids Test. The PRAP, at page 16, references a regulatory standard for dewatering material but none is specified. The regulatory standard referenced in the FS should be specified in the PRAP.

RESPONSE 34: The "paint filter test" cited in this comment is the regulatory standard referenced in the PRAP. For completeness the ROD has been modified to specify this standard, or another regulatory test which may be applicable at the time of the implementation of the remedy.

COMMENT 35: Page 5 of the PRAP provides that a wetlands delineation was done as a part of the RI. Please note that a wetland delineation was done in 1991 along the northern border of the landfill site (in connection with fencing a portion of the wetland).. No delineation report was ever produced. No additional delineation was done as a part of the RI.

RESPONSE 35: The ROD has been modified to reflect this misstatement.

COMMENT 36: Page 16 of the PRAP indicates that 1.3 acres of the landfilled area encroached into a Class 1 wetland. The wetland classification is incorrect. As indicated on Page 6 of the TES Report, the wetland at the site is a Class 2 wetland (SYE-6). After reviewing the PRAP, TES confirmed the proper classification of the wetland at the site by contracting Jean Cotterill, Cortland field office, NYSDEC.

RESPONSE 36: NYSDEC recognized this error and has revised the ROD accordingly.

COMMENT 37: A number of the headings appearing on Table 1 of the PRAP do not apply to the category for E. P. Toxicity. (PRAP at 9) E.P. Toxicity is not "Media", the results of an E.P. Toxicity analysis do not apply to the SEL established int he Guidance, and there is no SEL established for E.P. Toxicity results.

In addition, Table 1 of the PRAP needs to be corrected: The frequency of lead samples exceeding the SCGs should be 0 out of 9; chromium 1 out of 9. The zinc concentration range should be 14.7 - 36.7.

RESPONSE 37: Table 1 in the ROD has been revised to incorporate several of the changes identified above and others, particularly the revised SCG for chromium in soil of 50 ppm, noticed by NYSDEC.

COMMENT 38: At Page 6, the PRAP states that the there are "...solid waste corrective actions spelled out in the October 1995 Consent Decree." There are no

solid waste corrective actions contained in the October 1995 Consent Order and the reference to corrective action requirements should be removed.

RESPONSE 38: The Order recognizes the need for corrective actions to address the proper closure of the landfill, relative to alleged violations of the requirements of Environmental Conservation Law Section 27-0707. Specifically, paragraph 6 of this Order states that; "The parties contemplate that, upon completion of the work in the Work Plan for the RI/FS, Respondent will negotiate for a consent order with the Department for the development and implementation of a Remedial Design and Remedial Action ("RD/RA"). It is the understanding of the parties that such negotiation will, among other things, address, directly or indirectly, any environmental impacts of the violation alleged by this Order relating to the wetland, **solid waste disposal.** (emphasis added), as well as hazardous waste." Further the Order states that the Department reserves the right to require the Respondent to address the violation alleged in the Order independently if not included in the RD/RA activities related to the hazardous waste remedy. The language in the ROD has been modified to reflect the fact that the Order, while not specifically identifying required corrective actions, does call for appropriate actions either under the hazardous waste site remedial program or a separate action if necessary. This ROD will address the necessary closure actions to satisfy the requirements of the solid waste regulations.

# ADMINISTRATIVE RECORD
# SYRACUSE CHINA SITE

**The following documents comprise the administrative record for the Syracuse China Site, Remedial Investigation/Feasibility Study (RI/FS).**

Preliminary Hydrogeologic Assessment, Syracuse China Corporation. Prepared by O'Brien and Gere Engineers, Inc., April, 1991.

RI/FS Workplan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc, November, 1993.

Quality Assurance Project Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., November, 1993.

Health and Safety Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., November, 1993.

Field Sampling Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc, July, 1993.

Order on Consent, Index No. A601408802. In the Matter of the Development and Implementation of a Remedial Investigation/Feasibility Study for an Inactive Hazardous Waste Disposal Site, Under article 27, Title 13, and Article 71, Title 27 of the Environmental Conservation Law of the State of New York By: Syracuse China Manufacturing Company, Respondent, October 20, 1994.

Report on Geophysical Survey, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., January, 1995.

Revised Scope of Work, Focused Feasibility Study, Syracuse China Landfill, Syracuse china Manufacturing Company, Prepared by Geraghty and Miller, Inc. April 13, 1995.

Report on Exploratory Test Pits, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller, Inc., July, 1995.

Order on Consent, Case No. C7-5125-94-08. In the matter of Alleged Violations of the Environmental Conservation Law and Title 6 of the Official Compilation of Codes Rules and Regulations of the State of New York by: the Pfaltzgraff co., D/b/a Syracuse China Manufacturing Company Respondent. October 5, 1995.

Correspondence from Elizabeth Ford of Nixon, Hargrave, Devans & Doyle LLP to Steven M. Scharf, P.E. (NYSDEC), December 21, 1995. Re: Syracuse China- Ecological Risk-Based Lead Target Soil Cleanup Number.

Remedial Investigation Report, Syracuse China Landfill, Prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller, Inc., December, 1995,

NYSDEC Memorandum: January 17, 1996 - From Richard Koeppicus (DFW) to Steven Scharf (DHWR), Re: Response to December 21, 1995 Nixon, Hargrave Devans & Doyle LLP Letter.

Correspondence from Elizabeth Ford of Nixon, Hargrave, Devans & Doyle LLP to Steven M. Scharf, P.E. (NYSDEC) February 15, 1996. Re: NHDD Response to January 17, 1996 Richard Koeppicus Memorandum.

Focused Feasibility Study, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc. February, 1996

Correspondence from Robert S. McEwan, Jr. of Nixon, Hargrave, Devans & Doyle LLP, To Steven M. Scharf, P.E. (NYSDEC). Re: Comments on the RI, FS and Proposed Remedial Action Plan, Syracuse China Site. March 15, 1996.

Exhibit B
Appendix D

APPENDIX D

Department-Approved Remedial Design